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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Board of Patent Appeals and Interferences

In re application of:	Williams, et al.	Art Unit 2653
Serial No:	09/768,975	
Filed:	January 23, 2001	
For:	A DUAL STAGE, HEAD STACK ASSEMBLY FOR A DISK DRIVE	
Examiner:	Blouin, Mark	
Attorney Docket:	Q01-1000-US1/11198.52	

BRIEF ON APPEAL

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an appeal to the Board of Patent Appeals and Interferences from the Examiner's Final Rejection of pending claims 6, 9-11, 13 and 22-75 in the present application. A Notice of Appeal and required fees were mailed to the USPTO, via first class mail on July 12, 2005. This Brief on Appeal was timely filed within two months of the Notice of Appeal and with the required fees.

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I. Real Party in Interest

The real party in interest is Maxtor Corporation, assignee of the present application.

II. Related Appeals and Interferences

There are no appeals or interferences that are known which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending Appeal.

III. Status of Claims

Claims 6, 9-11, 13 and 22-75 are pending in the present application. Claims 1-5, 7-8, 12 and 14-21 have previously been canceled without prejudice. Claims 6, 9-11, 13 and 22-75 are the subject of this appeal.

IV. Status of Amendments

No amendments to the claims have been filed subsequent to final rejection.

V. Summary of Invention

The present invention is directed to a head stack assembly 15 for a disk drive 10 and a method for retrieving data from a target track 36 on a rotating storage disk 32 of

the disk drive 10. (Page 3, lines 17-19). The head stack assembly 15 includes an actuator arm 18, a coarse positioner 22, a transducer assembly 20, a separately formed base plate 26 and a fine positioner 24. (Page 3, lines 19-20; Figures 3A-3C and 4A-4C). The coarse positioner 22 moves the actuator arm 18 and the transducer assembly 20 relative to the storage disk 32. (Page 3, lines 20-21). The transducer assembly 20 includes a load beam 50, a flexure 52 secured to the load beam 50, and a data transducer 54 secured to the flexure 52. (Page 3, lines 22-23). The separately formed base plate 26 secures the transducer assembly 20 to the actuator arm 18. (Page 3, lines 23-24; Figures 3B, 3C, 4B and 4C). The fine positioner 24 increases the bandwidth of the head stack assembly 15 and minimizes track misregistration. (Page 3, lines 24-25).

In accordance with one embodiment, the fine positioner 24 includes a piezoelectric motor 98 that is secured directly to the separately formed base plate 26, rather than to the load beam 50. (Page 3, lines 26-27; page 8, lines 23-26; page 10, lines 23-25; Figures 3A-3C and 4A-4C). As a result of this design, the fine positioner 24 experiences less severe bending than if the fine positioner 24 were secured to the load beam 50, which is designed to flex during operation of the drive. (Page 3, lines 27-28). Further, during manufacturing, the fine positioner 24 can be added to the head stack assembly 15 with minimal changes to the design of the head stack assembly 15. (Page 3, lines 28-30). Moreover, the location of the fine positioner 24 minimizes the likelihood of adverse resonance characteristics of the head stack assembly 15 and avoids head gram load loss. (Page 3, lines 30-32).

In one embodiment, the base plate 26 includes one or more edges 78, one or more flex sections 86 that cantilever away from at least one of the edges 78, and one or more positioner cavities 85 that are positioned between the flex sections 86. (Page 8, lines 32 through page 9, line 2; page 9, lines 16-18; Figures 3A-3C and 4A-4C). The flex sections 86 allow the base plate 26 to flex. (Page 9, lines 19-34). In this embodiment, the fine positioner 24 is positioned in the positioner cavities 85, and moves a portion of the base plate 26 relative to the actuator arm 18. (Page 8, lines 32 through page 9, line 2; page 9, lines 16-22; Figures 3A-3C and 4A-4C). In an alternative embodiment, the fine positioner 24 is positioned over at least a portion of one of the positioner cavities 85. (Page 8, lines 32 through page 9, line 2; page 9, lines 16-22; Figures 3A-3C and 4A-4C).

In an alternative embodiment, the present invention is directed toward a disk drive 10 that includes an actuator arm 18, a transducer assembly 20, a separately formed base plate 26, and a fine positioner 24. (Page 3, lines 19-20; Figures 3A-3C and 4A-4C). In this embodiment, the transducer assembly 20 includes a load beam 50 and a data transducer 54 coupled to the load beam 50. (Figures 3A-3C and 4A-4C). Further, the base plate 26 secures the transducer assembly 20 to the actuator arm 18. (Page 3, lines 23-24; Figures 3B, 3C, 4B and 4C). The base plate 26 includes a flex section 86 that allows the base plate 26 to flex. (Page 9, lines 19-34; Figures 3A-3C and 4A-4C). The fine positioner 24 is positioned so that it does not contact the flex section 86. (Figures 3A-3C and 4A-4C). The fine positioner 24 selectively flexes at least a portion of the base plate 26. (Page 9, lines 19-34). In still another embodiment,

the separately formed base plate 26 has a thickness that is at least approximately three times the thickness of the load beam 50. (Page 10, lines 10-16).

In another embodiment, the fine positioner 24 can be a piezoelectric motor 98 having a proximal end 100 and a distal end 102. (Page 10, lines 23-25; Figures 3A-3C and 4A-4C). In this embodiment, the ends 100, 102 are secured to the base plate 26 so that the piezoelectric motor 98 is in a compression mode rather than in a sheer mode. (Page 10, lines 28-30). In the compression mode, the fine positioner 24 is more resilient to shock loads and vibration. (Page 4, lines 3-4). This reduces the incidence of fine positioner 24 stress cracking and increases the reliability of the fine positioner 24. (Page 4, lines 4-5).

In yet another embodiment, the separately formed base plate 26 includes a plate mount 80 that secures the base plate 26 to the actuator arm 18. (Page 9, lines 1-3). In this embodiment, a pair of piezoelectric motors 98 is secured to the base plate 26 parallel to one another between the plate mount 80 and the data transducer 54. (Figures 3A-3C and 4A-4C).

The present invention is also directed to a method for increasing the positioning accuracy of the disk drive 10. The method includes the steps of securing a transducer assembly 20 to an actuator arm 18 with a separately formed base plate 26 having a flex section 86 that flexes, securing a fine positioner 24 to the base plate 26 so that the fine positioner 24 is not in contact with the flex section 86, and flexing the flex section 86 with the fine positioner 24 to cause at least a portion of the base plate 26 to move relative to the actuator arm 18. (Page 3, lines 19-20; Figures 3A-3C and 4A-4C; Page 8, lines 32 through page 9, line 2; and Page 9, lines 16-34).

VI. **Issues:**

1. Whether claims 6, 9-11, 13 and 22-74 are anticipated by Khan et al. under 35 U.S.C. §102(e).

2. Whether claim 75 is unpatentable over Khan et al. under 35 U.S.C. §103(a).

VII. **Grouping of Claims:**

The claims are grouped as follows:

Issue 1:

Group I = Claims 6, 9-11 and 13;

Group II = Claims 22-26, 30-31, 33 and 35-36;

Group III = Claim 27;

Group IV = Claims 28-29;

Group V = Claims 37 and 46;

Group VI = Claims 32 and 51;

Group VII = Claim 34;

Group VIII = Claim 38;

Group IX = Claims 39-45;

Group X = Claim 47;

Group XI = Claims 48-49;

Group XII = Claims 50 and 53-57;

Group XIII = Claim 52;

Group XIV = Claim 58;

Group XV = Claims 59-63;

Group XVI = Claim 64;

Group XVII = Claims 65-66;

Group XVIII = Claim 67-71 and 74;

Group XIX = Claim 72;

Group XX = Claim 73;

Issue 2:

Group XXI = Claim 75.

The claims within Issue 1 do not stand or fall together. However, the Appellant has indicated separate Groups of one or more claims within Issue 1 that stand or fall together.

VIII. Argument:

Issue 1: Whether claims 6, 9-11, 13 and 22-74 are anticipated by Khan et al. under 35 U.S.C. §102(e).

Claims 6, 9-11, 13 and 22-74 are rejected under 35 U.S.C. § 102(e) as being anticipated by Khan et al. (US 6,188,548). The Appellants respectfully submit that Khan et al. does not support a rejection of these claims because Khan et al. does not teach or suggest the features of claims 6, 9-11, 13 and 22-74, as provided below.

The Examiner asserts in his Final Rejection that "...Khan et al. shows (Figs 1-5) a head stack assembly for a disc drive including ... a transducer assembly including a load beam (10), a flexure (12) secured to the load beam, a data transducer (40) secured to the flexure (12), a separately formed base plate securing the transducer assembly to the actuator arm, and a fine positioner (piezoelectric elements) secured directly to the base plate, the fine positioner moving a portion of the base plate relative to the actuator arm, wherein the base plate further comprises a positioner cavity (23) that receives the fine positioner, the proximal and distal ends are secured under compression, a flex section (224, 226) positioned adjacent to the positioner cavity, the flex section allowing the base plate to flex, a pair of spaced apart positioner cavities (Fig. 1) that receive the fine positioner, a pair of flex sections that allow the base plate to flex ... ." The Appellants respectfully submit that this reading of Khan et al. is inaccurate.

Khan et al. is directed toward a disk drive suspension that includes a load beam 10 that is supported by a mount plate 14 having a boss 16. (Col. 5, lines 11-14). The load beam 10 includes a base portion 18, a spring portion 20 and a beam portion 22 that carries a slider 40. (Col. 5, lines 14-16; Figs. 1-3 and 5). The Appellants submit that the mount plate 14, and more particularly the mount plate boss 16, fixes the base portion 18 of the load beam 10 to the actuator arm (not shown). Importantly, the mount plate boss 16 is <u>not</u> part of the load beam 10, but is part of the mount plate 14, which is a separate

structure from the load beam 10, having a separate function within the disk drive. (See, for example, Figures 3-4).

Piezoelectric crystals 32, 34 are bonded to the base portion 18 and the beam portion 22 <u>of the load beam</u> 10. (Col. 5, lines 17-20; Figs. 1-5). Moreover, the spring portion 20 of the load beam 10 includes arcuate sections 36, 38 that are connected to the base portion 18 of the load beam 10 and the beam portion 22 of the load beam 10. (Col. 5, lines 31-42; Figs. 1-5).

Khan et al. does not teach or suggest a <u>separately formed</u> base plate that secures the load beam structure to the actuator arm, with the base plate including one or more flex sections. Further, Khan et al. does not teach or suggest securing a fine positioner (e.g. one or more piezoelectric crystals 32, 34) to such a separately formed base plate.

With the present invention, the positioning of the fine positioner on the base plate, as opposed to the load beam, is beneficial for numerous reasons. Because the fine positioner is secured to the base plate instead of the load beam, the fine positioner is subject to less severe bending than if the fine positioner were secured to the load beam because of the relative thicknesses of the base plate versus the load beam. As a result thereof, more engineering changes to the design of the head stack assembly would be required if the fine positioner were added directly to the load beam.

Additionally, the location of the fine positioner less distally along the head-arm assembly decreases the likelihood of adverse resonance characteristics of the head stack assembly. Moreover, the less distal location of the fine positioner can decrease head gram load loss depending upon the gravitational orientation of the head-arm assembly relative to the storage disk. Further, the fine positioner of the present invention is placed in

compression mode instead of a sheer mode as taught by Khan et al. In the compression mode, the fine positioner is more resilient to shock loads and vibration. This decreases the incidence of fine positioner stress cracking and increases the reliability of the fine positioner.

In addition, because of the placement of the fine positioner on the base plate rather than the load beam, the life of the fine positioner is increased. The thickness of the base plate is typically three to five times greater than the load beam. As a result of this design, the base plate is less flexible when compared to the load beam and the fine positioner is therefore somewhat more protected from shock and vibration.

In contrast to Khan et al., claim 6 requires a "head stack assembly ... comprising: an actuator arm; a coarse positioner that moves the actuator arm relative to the storage disk; a transducer assembly including a load beam, a flexure secured to the load beam, and a data transducer secured to the flexure; a separately formed base plate securing the transducer assembly to the actuator arm, the base plate including (i) one or more edges, (ii) a pair of flex sections that cantilever away from at least one of the edges, the flex sections allowing the base plate to flex, and (iii) a pair of spaced apart positioner cavities that are positioned between the flex sections; and a fine positioner secured to the base plate, the fine positioner being positioned in the positioner cavities, the fine positioner moving a portion of the base plate relative to the actuator arm." As provided above, these features are not taught or suggested by Khan et al. Therefore, Khan et al. does not support a rejection of claim 6 under 35 U.S.C. § 102(e). Because claims 9-11 and 13 depend directly or indirectly from claim 6, Khan et al. likewise does not support a rejection of these claims, and the rejection should therefore be overturned.

Claim 22 of the present application is directed to a disk drive that requires "an actuator arm; a transducer assembly including a load beam and a data transducer coupled to the load beam; a separately formed base plate that secures the transducer assembly to the actuator arm, the base plate including a flex section that allows the base plate to flex; and a fine positioner that is secured to the base plate so that the fine positioner does not contact the flex section, the fine positioner selectively flexing at least a portion of the base plate." These features are not taught or suggested by Khan et al. Therefore, Khan et al. does not support a rejection of claim 22. Because claims 23-36 depend directly or indirectly from claim 22, Khan et al. likewise does not support a rejection of these claims, and the rejection should therefore be overturned.

Additionally, many of these dependent claims include additional features that are separately patentable in view of the cited reference. For example, dependent claim 27 requires that the fine positioner includes a pair of piezoelectric motors, and the base plate includes a pair of flex sections that are each positioned substantially between the pair of piezoelectric motors. Khan et al. does not teach positioning two flex sections between the two piezoelectric motors. Therefore, the features of claim 27 are not taught or suggested by Khan et al.

Moreover, dependent claims 28-29 require that the fine positioner includes a pair of piezoelectric motors, and that one (claim 28) or both (claim 29) of the piezoelectric motors is secured to the base plate under compression. Khan et al. does not discuss placement of the piezoelectric crystals under compression. Thus, the features of claims 28-29 are not taught or suggested by Khan et al.

Further, dependent claim 32 (and dependent claim 51, see *infra.*) requires that the fine positioner includes a pair of piezoelectric motors, and that at least one of the piezoelectric motors includes a proximal and a distal end, and wherein the proximal end and the distal ends are the only portions of the piezoelectric motor that contact the base plate. Khan et al. does not teach contact between the piezoelectric crystals and the base plate, much less contact between the piezoelectric crystals and the base plate occurring only at the ends of the piezoelectric crystals. Thus, the features of claim 32 (and claim 51) are not taught or suggested by Khan et al.

In addition, dependent claim 34 requires that the flex section is substantially V-shaped. Khan et al. does not teach the base plate having a flex section with this configuration. Therefore, the features of claim 34 are not taught or suggested by Khan et al.

Claim 37 requires "an actuator arm; a transducer assembly including a load beam and a data transducer coupled to the load beam; a separately formed base plate that secures the transducer assembly to the actuator arm; and a first piezoelectric motor having a proximal end and a distal end, that ends being secured to the base plate so that the first piezoelectric motor is under compression, the first piezoelectric motor moving a portion of the base plate relative to the actuator arm." These features are not taught or suggested by Khan et al. Therefore, Khan et al. does not support a rejection of claim 37. Because claims 38-49 depend directly or indirectly from claim 37, Khan et al. likewise does not support a rejection of these claims, and the rejection should therefore be overturned.

Additionally, many of these dependent claims include additional features that are separately patentable in view of the cited reference. For example, dependent claim 38

requires the disk drive to include a controller that directs current to the first piezoelectric motor, and wherein the first piezoelectric motor is under compression while the controller is not directing current to the first piezoelectric motor. Khan et al. does not teach the piezoelectric crystal being under compression while no current is directed to the piezoelectric crystal. Therefore, the features of claim 38 are not taught or suggested by Khan et al.

Dependent claims 39-45 also include features that are separately patentable over the cited reference. These claims require that the proximal end and the distal end of the first piezoelectric motor are the only portions of the first piezoelectric motor that contact the base plate. Khan et al. teaches that other portions of the piezoelectric crystals are in contact with the load beam, and that no portions of the piezoelectric crystals are in contact with the base plate. Thus, the features of claims 39-45 are not taught or suggested by Khan et al., and the rejection based on Khan et al. is unsupported and should be overturned.

Dependent claim 47 also includes features that are separately patentable over Khan et al. Claim 47 requires, in combination with the features of claim 37, that the flex section of the base plate is substantially V-shaped. Khan et al. does not teach the base plate having a flex section with this configuration. Therefore, the features of claim 47 are not taught or suggested by Khan et al., and the rejection of this claim should be overturned.

Claim 50 is directed toward a disk drive that requires "an actuator arm; a transducer assembly including a load beam and a data transducer coupled to the load beam; a separately formed base plate that secures the transducer assembly to the actuator arm,

the base plate including a plate mount that secures the base plate to the actuator arm; and a pair of piezoelectric motors that are each secured to the base plate between the plate mount and the data transducer, the piezoelectric motors being substantially parallel to each other, the piezoelectric motors moving a portion of the base plate relative to the actuator arm." These features are not taught or suggested by Khan et al. Therefore, Khan et al. does not support a rejection of claim 50. Because claims 51-58 depend directly or indirectly from claim 50, Khan et al. likewise does not support a rejection of these claims, and the rejection should therefore be overturned.

Additionally, many of these dependent claims include additional features that are separately patentable in view of the cited reference. For example, dependent claim 52 requires that the ends of at least one the piezoelectric motors is secured to the base plate so that the piezoelectric element is under compression. Khan et al. does not discuss placement of the piezoelectric crystals under compression. Thus, the features of claim 52 are not taught or suggested by Khan et al.

Further, dependent claim 58 also includes features that are separately patentable over Khan et al. Claim 58 requires that at least one of the flex sections of the base plate is substantially V-shaped. Khan et al. does not teach the base plate having a flex section with this configuration. Therefore, the features of claim 58 are not taught or suggested by Khan et al., and the rejection of this claim should be overturned.

Claim 59 requires "an actuator arm; a transducer assembly including a load beam and a data transducer coupled to the load beam; a separately formed base plate that secures the transducer assembly to the actuator arm, the base plate including a positioner cavity that extends through the base plate; and a fine positioner that is secured to the base

plate so that the fine positioner is positioned over at least a portion of the positioner cavity, the fine positioner selectively flexing at least a portion of the base plate." These features are not taught or suggested by Khan et al. Therefore, Khan et al. does not support a rejection of claim 59. Because claims 60-66 depend directly or indirectly from claim 59, Khan et al. likewise does not support a rejection of these claims, and the rejection should therefore be overturned.

Additionally, many of these dependent claims include additional features that are separately patentable in view of the cited reference. For example, dependent claim 64 requires that each of the flex sections of the base plate is positioned substantially between the pair of piezoelectric motors. Khan et al. does not teach positioning two flex sections between the two piezoelectric motors. Therefore, the features of claim 64 are not taught or suggested by Khan et al.

Dependent claims 65-66 require that the fine positioner includes a pair of piezoelectric motors, and that one (claim 65) or both (claim 66) of the piezoelectric motors is secured to the base plate under compression. Khan et al. does not discuss placement of the piezoelectric crystals under compression. Thus, the features of claims 65-66 are not taught or suggested by Khan et al.

Claim 67 of the present invention is directed toward a method that requires "securing a transducer assembly to an actuator arm with a separately formed base plate having a flex section that flexes; securing a fine positioner to the base plate so that the fine positioner is not in contact with the flex section; and flexing the flex section with the fine positioner to cause at least a portion of the base plate to move relative to the actuator arm." These steps are not taught or suggested by Khan et al. Therefore, Khan et al. does

not support a rejection of claim 67. Because claims 68-74 depend directly or indirectly from claim 67, Khan et al. likewise does not support a rejection of these claims, and the rejection should therefore be overturned.

Additionally, many of these dependent claims include additional features that are separately patentable in view of the cited reference. For example, dependent claim 72 requires positioning a pair of flex sections substantially between the piezoelectric motors, which is not taught or suggested by Khan et al. Further, dependent claim 73 requires securing the fine positioner to the base plate so that the fine positioner is under compression. This feature is also not taught or suggested by Khan et al.

Issue No. 2: *Whether claim 75 is unpatentable over Khan et al. under 35 U.S.C. §103(a).*

Claim 75 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Khan et al. in view of Ohwe et al (US 6,594,116). The Appellants respectfully appeal the rejection of claim 75 on the grounds that the cited combination of references does not support such a rejection, the cited combination does not teach or suggest the features of the rejected claim, and there is no motivation to combine the cited references.

The Examiner states in its rejection that "Khan et al shows all the features described, supra, but does not show a load beam where the base plate [sic], which is at least approximately three times the thickness of the lead beam. Ohwe shows ... that a load beam can be a thickness ranging between 0.02 to 0.08 mm, which when combined

with Khan et al. would make the base plate at least approximately three times the thickness of the load beam."

The Appellants respectfully disagree with this rationale for several reasons. First, even if Ohwe shows that a load beam has a thickness ranging between 0.02 to 0.08 mm, Khan et al does not teach or suggest use of a base plate, nor does Khan et al indicate what the thickness of a base plate would or should be. Thus, the combination does not teach or suggest having a base plate that is at least approximately three times the thickness of the load beam.

Second, the Examiner identifies in his Final Rejection what he believes is the "separately formed base plate" 18 in Khan et al. However, base portion 18 in Khan has a thickness that does not appear any different, i.e. thicker or thinner, than the remainder of the load beam 10. In reality, Appellants submit that base portion 18 is part of the load beam 10, and is not a separate structure that has a function of securing the load beam to the actuator arm. This is supported by a clear reading of Khan et al, which states that "load beam 10 has a base portion 18, fixed on mount plate boss 16, a spring portion 20 and a beam portion 22 carrying a slider 40." (Col. 5, lines 14-17).

However, assuming for the sake of argument that the base portion 18 is a "base plate" (which Appellants vehemently dispute), the thickness of the base portion 18 is the same as the thickness of the load beam 10. Combining the structure taught by Khan et al with the load beam disclosed in Ohwe et al, would not provide a ratio of the thickness of the base plate relative to the load beam as the Examiner suggests. Thus, the cited combination does not teach or suggest having a base plate that is at least approximately three times the thickness of the load beam.

Third, the Appellants submit that there is no motivation to use the device taught by Ohwe et al in Khan et al's device. "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the Appellant's disclosure." *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991; Emphasis added). In the present case, neither is found.

Even if the combination of references taught every element of the claimed invention (which it does not), without a motivation to combine, a rejection based on a prima façie case of obviousness has been held improper. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998). Further, the "mere fact that references *can* be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990; emphasis original and added).

In the present case, the prior art does not clearly suggest the desirability of the resultant combination. In addition to the description of Khan et al. provided above, including the distinguishing feature that the piezoelectric crystals in Khan et al. are positioned on the load beam instead of a separately formed base plate, the Appellants submit that Khan et al. does not teach or suggest positioning one or more piezoelectric crystals on a base plate having a thickness that is at least three times the thickness of the load beam.

Additionally, regardless of the thickness of the base plate taught by Ohwe et al., neither Khan et al. nor Ohwe et al. teaches placement of the piezoelectric crystals on the base plate. In fact, Ohwe et al. does not teach or suggest using piezoelectric crystals, or any fine positioner, anywhere in the entire apparatus. Thus, combining Khan et al. and

Ohwe et al. (assuming there was some suggestion to do so, which Appellants dispute) still does not teach or suggest the features of the rejected claim.

Moreover, there does not appear to be any motivation to use to the load beam taught by Ohwe et al with the base portion 18 (which is actually part of the load beam 10) taught by Khan et al. The Appellants submit that there is no clear purpose to combining two load beams. On the other hand, assuming the Examiner's position is that the load beam 1 in Ohwe et al should be combined with the mount plate 14 taught by Khan et al, the Appellants submit that the mount plate 14 is a separate structure from the load beam 10, and that no piezoelectric crystals are secured to this separate structure 14, in direct contrast with rejected claim 75.

In contrast to the cited references, claim 75 is directed toward a disk drive that requires "an actuator arm; a data transducer; a load beam that is coupled to and supports the data transducer, the load beam having a thickness; a base plate that secures the transducer assembly to the actuator arm, the base plate having a thickness that is at least approximately three times the thickness of the load beam, the base plate including a flex section that allows the base plate to flex; and a fine positioner that is secured to the base plate so that the fine positioner does not contact the flex section, the fine positioner selectively flexing at least a portion of the base plate." These features are not taught or suggested by the cited combination of references. Therefore, the combination of references does not support a rejection of claim 75, and the rejection should be withdrawn.

IX. Conclusion

For the reasons advanced above, Appellants respectfully contend that each claim pending in the instant application is patentable, and should be allowed.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage of fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 50-1141, and please credit any excess fees to such deposit account.

Dated this 8th day of August, 2005.

Respectfully submitted,

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APPENDIX OF CLAIMS

6. A head stack assembly for a disk drive, the disk drive including a storage disk, the head stack assembly comprising:

an actuator arm;

a coarse positioner that moves the actuator arm relative to the storage disk;

a transducer assembly including a load beam, a flexure secured to the load beam, and a data transducer secured to the flexure;

a separately formed base plate securing the transducer assembly to the actuator arm, the base plate including (i) one or more edges, (ii) a pair of flex sections that cantilever away from at least one of the edges, the flex sections allowing the base plate to flex, and (iii) a pair of spaced apart positioner cavities that are positioned between the flex sections; and

a fine positioner secured to the base plate, the fine positioner being positioned in the positioner cavities, the fine positioner moving a portion of the base plate relative to the actuator arm.

9. A disk drive comprising the head stack assembly of claim 6, and a storage disk.

10. The disk drive of claim 9 further comprising a control system that (i) directs current to the coarse positioner to move the actuator arm so that the data

transducer is positioned near the target track and (ii) directs current to the fine positioner to move the base plate so that the data transducer is positioned on the target track.

11. The disk drive of claim 9 further comprising a control system that (i) directs current to the coarse positioner to move the actuator arm so that the data transducer is on the target track, and (ii) directs current to the fine positioner to selectively move the base plate to maintain the data transducer on the target track.

13. The disk drive of claim 9 wherein the fine positioner is a piezoelectric motor.

22. A disk drive, comprising:

an actuator arm;

a transducer assembly including a load beam and a data transducer coupled to the load beam;

a separately formed base plate that secures the transducer assembly to the actuator arm, the base plate including a flex section that allows the base plate to flex; and

a fine positioner that is secured to the base plate so that the fine positioner does not contact the flex section, the fine positioner selectively flexing at least a portion of the base plate.

23. The disk drive of claim 22 wherein the fine positioner includes a pair of piezoelectric motors.

24. The disk drive of claim 23 wherein the base plate includes a pair of flex sections that allow the base plate to flex, and wherein at least one of the piezoelectric motors is positioned substantially between the flex sections.

25. The disk drive of claim 24 wherein each of the piezoelectric motors is positioned substantially between the flex sections.

26. The disk drive of claim 23 wherein the base plate includes a pair of flex sections that allow the base plate to flex, and wherein at least one of the flex sections is positioned substantially between the pair of piezoelectric motors.

27. The disk drive of claim 26 wherein each of the flex sections is positioned substantially between the pair of piezoelectric motors.

28. The disk drive of claim 23 wherein at least one of the piezoelectric motors is secured to the base plate under compression.

29. The disk drive of claim 23 wherein each of the piezoelectric motors is secured to the base plate under compression.

30. The disk drive of claim 23 wherein the base plate includes a plate mount that secures the base plate to the actuator arm, and wherein at least one of the piezoelectric motors is secured to the base plate substantially between the plate mount and the data transducer.

31. The disk drive of claim 30 wherein the piezoelectric motors are positioned substantially parallel to each other.

32. The disk drive of claim 23 wherein at least one of the piezoelectric motors includes a proximal end and a distal end, and wherein the proximal end and the distal end are the only portions of the at least one piezoelectric motor that contact the base plate.

33. The disk drive of claim 22 wherein the flex section is substantially U-shaped.

34. The disk drive of claim 22 wherein the flex section is substantially V-shaped.

35. The disk drive of claim 22 wherein the base plate includes a plate side, and wherein the flex section cantilevers away from the plate side.

36. The disk drive of claim 22 wherein the base plate includes a pair of plate sides and a pair of flex sections, and wherein each of the flex sections cantilevers away from a corresponding plate side.

37. A disk drive, comprising:

an actuator arm;

a transducer assembly including a load beam and a data transducer coupled to the load beam;

a separately formed base plate that secures the transducer assembly to the actuator arm; and

a first piezoelectric motor having a proximal end and a distal end, that ends being secured to the base plate so that the first piezoelectric motor is under compression, the first piezoelectric motor moving a portion of the base plate relative to the actuator arm.

38. The disk drive of claim 37 further comprising a controller that selectively directs current to the first piezoelectric motor, the first piezoelectric motor being under compression while the controller is not directing current to the first piezoelectric motor.

39. The disk drive of claim 37 wherein the proximal end and the distal end of the first piezoelectric motor are the only portions of the first piezoelectric motor that contact the base plate.

40. The disk drive of claim 39 further comprising a second piezoelectric motor and a second positioner cavity, and wherein the second piezoelectric motor has a proximal end and a distal end, the ends of the second piezoelectric motor being secured to the base plate so that the second piezoelectric motor is under compression.

41. The disk drive of claim 40 wherein the base plate includes a plate mount that secures the base plate to the actuator arm, and wherein at least one of the piezoelectric motors is secured to the base plate substantially between the plate mount and the data transducer.

42. The disk drive of claim 41 wherein the piezoelectric motors are substantially parallel to each other.

43. The disk drive of claim 40 wherein the base plate includes a pair of flex sections that allow the base plate to flex, and wherein the piezoelectric motors do not contact the flex sections.

44. The disk drive of claim 43 wherein at least one of the piezoelectric motors is positioned substantially between the flex sections.

45. The disk drive of claim 43 wherein at least one of the flex sections is positioned substantially between the piezoelectric motors.

46. The disk drive of claim 37 wherein the base plate includes a flex section that allows the base to flex, the flex section being substantially U-shaped.

47. The disk drive of claim 37 wherein the base plate includes a flex section that allows the base to flex, the flex section being substantially V-shaped.

48. The disk drive of claim 37 wherein the base plate includes (i) a plate side, and (ii) a flex section that allows the base plate to flex, the flex section cantilevering away from the plate side.

49. The disk drive of claim 37 wherein the base plate includes (i) a pair of plate sides, and (ii) a pair of flex sections that allow the base to flex, each of the flex sections cantilevering away from a corresponding plate side.

50. A disk drive, comprising:

an actuator arm;

a transducer assembly including a load beam and a data transducer coupled to the load beam;

a separately formed base plate that secures the transducer assembly to the actuator arm, the base plate including a plate mount that secures the base plate to the actuator arm; and

a pair of piezoelectric motors that are each secured to the base plate between the plate mount and the data transducer, the piezoelectric motors being substantially parallel to each other, the piezoelectric motors moving a portion of the base plate relative to the actuator arm.

51. The disk drive of claim 50 wherein each piezoelectric motor includes a proximal end and a distal end, wherein the ends of the piezoelectric motors are the only portions of the piezoelectric motors that contact the base plate.

52. The disk drive of claim 50 wherein the ends of at least one of the piezoelectric motors are secured to the base plate so that the at least one piezoelectric motor is under compression.

53. The disk drive of claim 50 wherein the base plate includes a pair of flex sections that allow the base plate to flex, and wherein at least one of the piezoelectric motors does not contact either of the flex sections.

54. The disk drive of claim 53 wherein at least one piezoelectric motor is positioned between the flex sections.

55. The disk drive of claim 54 wherein at least one of the flex sections is substantially U-shaped.

56. The disk drive of claim 54 wherein the base plate includes a plate side, and wherein at least one of the flex sections cantilevers away from the plate side.

57. The disk drive of claim 53 wherein at least one of the flex sections is positioned substantially between the piezoelectric motors.

58. The disk drive of claim 57 wherein at least one of the flex sections is substantially V-shaped.

59. A disk drive comprising:

an actuator arm;

a transducer assembly including a load beam and a data transducer coupled to the load beam;

a separately formed base plate that secures the transducer assembly to the actuator arm, the base plate including a positioner cavity that extends through the base plate; and

a fine positioner that is secured to the base plate so that the fine positioner is positioned over at least a portion of the positioner cavity, the fine positioner selectively flexing at least a portion of the base plate.

60. The disk drive of claim 59 wherein the fine positioner includes a pair of piezoelectric motors.

61. The disk drive of claim 60 wherein the base plate includes a pair of flex sections that allow the base plate to flex, and wherein at least one of the piezoelectric motors is positioned substantially between the flex sections.

62. The disk drive of claim 61 wherein each of the piezoelectric motors is positioned substantially between the flex sections.

63. The disk drive of claim 60 wherein the base plate includes a pair of flex sections that allow the base plate to flex, and wherein at least one of the flex sections is positioned substantially between the pair of piezoelectric motors.

64. The disk drive of claim 63 wherein each of the flex sections is positioned substantially between the pair of piezoelectric motors.

65. The disk drive of claim 60 wherein at least one of the piezoelectric motors is secured to the base plate under compression.

66. The disk drive of claim 60 wherein each of the piezoelectric motors is secured to the base plate under compression.

67. A method for increasing the positioning accuracy of a disk drive, the method comprising the steps of:

securing a transducer assembly to an actuator arm with a separately formed base plate having a flex section that flexes;

securing a fine positioner to the base plate so that the fine positioner is not in contact with the flex section; and

flexing the flex section with the fine positioner to cause at least a portion of the base plate to move relative to the actuator arm.

68. The method of claim 67 wherein the step of securing the fine positioner includes using a piezoelectric motor as the fine positioner.

69. The method of claim 67 wherein the step of securing the transducer assembly includes providing the base plate having a pair of spaced apart flex sections that flex, and wherein the step of flexing the flex section includes moving the fine positioner to flex each of the flex sections to cause at least a portion of the base plate to move relative to the actuator arm.

70. The method of claim 69 wherein the step of securing the fine positioner includes using a pair of spaced apart piezoelectric motors as the fine positioner and positioning the piezoelectric motors substantially between the flex sections.

71. The method of claim 70 wherein the step of securing the transducer assembly includes providing the base plate having a plate side, and cantilevering the flex section away from the plate side.

72. The method of claim 69 wherein the step of securing the fine positioner includes using a pair of piezoelectric motors as the fine positioner and positioning the flex sections substantially between the piezoelectric motors.

73. The method of claim 67 wherein the step of securing the fine positioner includes securing the fine positioner to the base plate so that the fine positioner is under compression.

74. The method of claim 67 wherein the step of securing the transducer assembly includes using a plate mount of the base plate secure the transducer assembly to the actuator arm,. and wherein the step of securing the fine positioner includes (i) positioning the fine positioner to the base plate substantially between the plate mount and the data transducer, and (ii) providing

a pair of substantially parallel, spaced apart piezoelectric motors as the fine positioner.

75. A disk drive, comprising:

an actuator arm;

a data transducer;

a load beam that is coupled to and supports the data transducer, the load beam having a thickness;

a base plate that secures the load beam to the actuator arm, the base plate having a thickness that is at least approximately three times the thickness of the load beam, the base plate including a flex section that allows the base plate to flex; and

a fine positioner that is secured to the base plate so that the fine positioner does not contact the flex section, the fine positioner selectively flexing at least a portion of the base plate.

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PTO/SB/21 (09-04)
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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/768,975
Filing Date	January 23, 2001
First Named Inventor	Williams, et al.
Art Unit	2653
Examiner Name	Blouin, Mark
Attorney Docket Number	Q01-1000-US1/11198.52
Total Number of Pages in This Submission	104

ENCLOSURES *(Check all that apply)*

- [x] Fee Transmittal Form
  - [x] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) ____________
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please Identify below):

Return Receipt Postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Law Offices of Sreven G. Roeder		
Signature	JBr		
Printed name	James P. Broder		
Date	August 8, 2005	Reg. No.	43,514

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I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

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Typed or printed name	James P. Broder	Date	August 8, 2005

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PTO/SB/17 (12-04v2)
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Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL
For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	($) 500.00

Complete if Known	
Application Number	09/768,975
Filing Date	January 23, 2001
First Named Inventor	Williams, et al.
Examiner Name	Blouin, Mark
Art Unit	2653
Attorney Docket No.	Q01-1000-US1/11198.52

METHOD OF PAYMENT (check all that apply)

☑ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): ____________

☑ Deposit Account Deposit Account Number: 50-1141 Deposit Account Name: Steven G. Roeder

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below

☐ Charge fee(s) indicated below, **except for the filing fee**

☑ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17

☑ Credit any overpayments

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES Fee ($)	FILING FEES Small Entity Fee ($)	SEARCH FEES Fee ($)	SEARCH FEES Small Entity Fee ($)	EXAMINATION FEES Fee ($)	EXAMINATION FEES Small Entity Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims ______ - 20 or HP = **Extra Claims** ______ x **Fee ($)** ______ = **Fee Paid ($)** ______

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims ______ - 3 or HP = **Extra Claims** ______ x **Fee ($)** ______ = **Fee Paid ($)** ______

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims — **Fee ($)** ______ **Fee Paid ($)** ______

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets ______ - 100 = **Extra Sheets** ______ / 50 = **Number of each additional 50 or fraction thereof** ______ (round **up** to a whole number) x **Fee ($)** ______ = **Fee Paid ($)** ______

4. OTHER FEE(S) **Fees Paid ($)**

Non-English Specification, $130 fee (no small entity discount) ______

Other (e.g., late filing surcharge): Appeal Brief $500.00

SUBMITTED BY			
Signature	[signature]	Registration No. (Attorney/Agent) 43,514	Telephone 858-456-1951
Name (Print/Type)	James P. Broder		Date August 8, 2005

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Dated this the 8th day of August, 2005.

Respectfully submitted,

JAMES P. BRODER
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